

LMC 8803

MTH Entanglements Fall 2024

M/W 3:30 p.m. - 4:45 p.m. in Skiles 346

### Instructor Information

**Instructor**

Heidi Biggs

**Email**

hbiggs7@gatech.edu

**Office Hours & Location**

Tuesday 2 - 3:30 p.m. TSRB 314b  
or by appointment

### Course Description

In this course, we explore the emerging more-than-human approach to designing and understanding technology. More-than-human approaches notice the ways that we are entangled with larger ecologies of non-human actors like algorithms, data, ecologies, animals, plants, and infrastructures. This class runs a dual purpose of learning theory and applying it into designerly methods and making. We will be reading some of the major works which have inspired the more-than-human turn in HCI, design, and digital media, as well as testing out some of the methods as they relate to the individual interests or curiosities of classmates.

### Teaching Philosophy

I hope to support multi-faceted learning that includes rigorous engagement with texts and theory through multi-modal explorations. My goals are to open doors to curiosity, critical questioning, ethical and out-of-the box thinking, and creative approaches to responding to and applying knowledge.

### Course Goals and Learning Outcomes

1. Students gain exposure to a wide range of more-than-human concepts which they understand both individually and collectively.
2. Students can articulate their own rationale for the goals and uses of MTH design and research, as well as an ethics of more-than-human ways of working.
3. Students apply these theories to contemporary issues in HCI and design like emerging technology and climate change.
4. Students MTH theory into creativity and research to create an artifact or essay that reflects their own interests and research questions which explore MTH entanglements.
5. Students feel safe being intellectually vulnerable, asking questions, and supported in taking intellectual and creative risks.

### Course Requirements and Grading

<b>Reading Responses</b>	20%
<b>Discussion Leader</b>	10%
<b>Midterm Project</b>	20%
<b>Final Project</b>	40%
<b>Participation</b>	10%

### Materials and Technology

- Reading materials are all available as PDFs on Canvas
- We will implement technology as needed (for example, a group slide deck) and it is recommended to bring a laptop to class if possible for group activities and in-class explorations.

## Description of Graded Components

### **READING RESPONSES (20%)**

DUE SUNDAY AT 11:59 PM

(except when we have a Monday off, then due TUESDAY @ 11:59 P.M.)

Each week, please respond to the readings on canvas in a discussion post comprised of:

1. The response: this can be anything you want: a sculpture, a short story, a short essay, photography, etc.
2. Each reading response should be accompanied by a small paragraph explaining what you are responding to (unless it is a written response, I assume that will be included).
3. Each reading response should include at least two discussion questions.

Grading: reading response is graded simply pass/fail. You can miss 3 reading responses. If you miss more than three and need to turn in late reading responses, they will count for half.

### **DISCUSSION LEADERSHIP (10%)**

On Monday, we discuss! DUE in class.

Each Student will lead one or two readings (depending on number of students) (SIGN UP LINK IN CANVAS)

1. 5-minute summary/background of the authors of the essays we read
2. 5-10-minute summary of the readings which covers key concepts (hint: look at the topic of the week)
3. Questions for discussion. (Feel free to also draw from classmate's discussion posts or highlight anything interesting they might have mentioned)
4. Lead discussion for an additional 20 or 30 minutes.

Grading: Out of 10 points, based on having each component above.

### **MIDTERM: MTH NOTICING OR MULTI-SPECIES ETHNOGRAPHY (20%)**

Midterm: Proposal

***DUE Sept 18th (before class)***

Parts of the proposal (~500 words):

1. Name a non-human entity or assemblage you want to do a noticing practice or do a multi-species ethnography about (preferably local, somewhere you can visit often). Why this thing?
2. Provide a situated account of this thing/phenomenon (situate it in place, in history)
3. Describe a methodology for how you will notice or study this thing supported by at least one journal article.
4. Provide a timeline of proposed study

Midterm: Final Outcome

**DUE: Oct 18th**

**Deliverables:**

1. 4 observational journal or observation entries
2. Create a map of this more-than-human constituency that includes a sense of the history and situatedness **OR** craft 3 more-than-human personas – who are some of their key agents in this constituency and what are their roles.
3. 500 word reflection on what kind of new awareness you have which includes three recommendations you could give to people either wanting to design with these non-humans in mind, or ways you might design to surface or make these entanglements more obvious.
4. One slide for a rapid-fire round of presentations

**FINAL PROJECT: CHOOSE YOUR OWN ADVENTURE (40%)**

**Proposal DUE: Nov 6**

- 1) 300 word abstract outlining the proposed project, the critical thesis or concept you are presenting, the theoretical frame it is connected to, and the form the project will take.
- 2) Timeline for the proposed work

**Final Due: Dec 11**

A critical creative expression or paper that reflects or discusses aspects of a more-than-human entanglement.

Some possible examples: design something that brings people's attention to more than human entanglements, explore entanglements or intra-actions with AI or variety of technology, develop a more-than-human fabulation (film, comic book, short story), write a paper on a topic of your own interest.

For finals that are not a paper, I will require a 1,500 word reflection on how the project reflects more-than-human theories covered in class and an explanation of the critical position the project takes. In addition, everyone will be required to write a 500 word reflection on MTH ethics and the ethics of their unique project.

Rubric will be handed out closer to the project, after the midterm.

**PARTICIPATION (10%)**

This is a category mostly meant to boost your final grade. Within reason everyone has their own level of comfort of discussing or chiming in during class, that said, I hope you participate in class discussions and activities. I will attempt to scaffold the class so that everyone has a chance to participate in low-stakes ways. Ultimately, this grade is just about showing up and doing your best, which isn't perfection, it's just meeting yourself where you are and giving what you can. So that is about it!

# WEEK BY WEEK SCHEDULE

## WEEK/DATE

## READINGS:

## HOMEWORK DUE

### INTRO TO MORE-THAN-HUMAN ENTANGLEMENTS

#### WEEK 1: INTRO TO THE COURSE, EACH OTHER AND MTH ENTANGLEMENT

##### August 19th

- Covering the Syllabus

##### August 21: Overview of MTH Entanglements and Connecting to Societal Issues

- Forlano, Laura. 2017. "Posthumanism and Design." *She Ji* 3 (1): 16–29. <https://doi.org/10.1016/j.sheji.2017.08.001>.
- Sustainable Development Goals: <https://sdgs.un.org/goals>

#### WEEK 2: What are we up to here? Laying out some theoretical landscapes

##### August 26th & 28th

- Wakkary, Ron. 2021. *Things We Could Design: For More than Human-Centered Worlds*. MIT press. **Page 1 - 11**
- 2010. *New Materialisms: Ontology, Agency, and Politics*. Edited by Diana Coole and Samantha Frost. Duke University Press. **Page 1 - 36; focus on 24 - 36**
- Example: Water Portraits: Carolina Caycedo Interviewed *Bomb Magazine*: <https://bombmagazine.org/articles/2020/06/12/water-portraits-carolina-caycedo-interviewed/>
- (bonus) Frauenberger, Christopher. 2019. "Entanglement HCI the next Wave?" *ACM Transactions on Computer-Human Interaction* 27 (1): 1–27. <https://doi.org/10.1145/3364998>.

### ECOLOGICAL MTH ENTANGLEMENTS

#### WEEK 3: Intro to Ecological MTH Entanglements and the Anthropocene

September 2 No Class

##### September 4th: Why MTH and Debates around the Anthropocene

- Light, Ann, Irina Shklovski, and Alison Powell. 2017. "Design for Existential Crisis." *Proceedings of the 2017 CHI Conference Extended Abstracts on Human Factors in Computing Systems (CHI EA '17)*, 722–34. <https://doi.org/10.1145/3027063.3052760>.
- Crutzen, Paul J. 2002. "The 'Anthropocene.'" In *Journal de Physique IV (Proceedings)*, 12:1–5. EDP sciences.
- Whyte, Kyle. 2017. "Indigenous Climate Change Studies : Indigenizing Futures, Decolonizing the Anthropocene." *English Language Notes* 55: 153–62. <https://muse.jhu.edu/article/711473>.
- Example: <https://www.adamdiller.com/>
- (bonus) Haraway, Donna. 2016. "Tentacular Thinking: Anthropocene, Capitalocene, Chthulucene." *E-Flux*, no. 75: 1–17. <https://doi.org/10.1215/9780822373780>.

8/21 (before class):  
reading response w/  
one example of a  
MTH entanglement

8/25 @ 11:59 p.m.  
reading response

9/3 @ 11:59 p.m.  
reading response

## WEEK 4: Natureculture and Noticing as a Method

### September 9th & 11th:

- Companion Species Manifesto Dona Harraway Section "Natureculture"
- Anna Tsing Mushroom at the End of the World; Arts of Noticing (pg 17-26)
- Liu, Szu Yu, Jen Liu, Kristin Dew, Patrycja Zdziarska, Maya Livio, and Shaowen Bardzell. 2019. "Exploring Noticing as Method in Design Research." DIS 2019 Companion - Companion Publication of the 2019 ACM Designing Interactive Systems Conference, 377–80. <https://doi.org/10.1145/3301019.3319995>.
- (skim for methods!) Seeding a Repository of Methods-To-Be for Nature-Entangled Design Research (2024)
- (skim) Liu, Szu Yu, Shaowen Bardzell, and Jeffrey Bardzell. 2019. "Symbiotic Encounters: HCI and Sustainable Agriculture." Conference on Human Factors in Computing Systems - Proceedings, 1–13. <https://doi.org/10.1145/3290605.3300547>.

9/8 @ 11:59 p.m.  
reading response

## WEEK 5: Mapping New Terrains

### September 16th & 18: Creative Maps of MTH Ecological Entanglements

- Feral Atlas
- Kate Crawford's map of AI
- Tsing Mushroom at the End of the World: The Life of the Forest pg. 155-163
- Ofer, Netta, and Mirela Alistar. 2024. "Tracing as a Strategy for Orienting to Nonhuman Perspectives," 1087–1100. <https://doi.org/10.1145/3643834.3661621>.
- Dark Properties -- Sensing the Earth (newsletter)

9/15 @ 11:59 p.m.  
reading response

9/18 @ 3:30  
3 possible subjects  
for midterm for class  
feedback

## **ASSEMBLAGE, MATERIAL AGENCY, AND TECHNOLOGY**

### WEEK 6: Assemblages

#### September 23 & 25

- Vibrant Matter, Jane Bennet (2010) Ch 2
- Thinks we could design for More Than Human Worlds Ch 7 pg. 201-230

9/22 @ 11:59 p.m.  
reading response

9/25 @ 11:59 p.m.  
**midterm proposal  
due**

### WEEK 7: Intra-Actions and Agential Realism

#### September 30 & October 2

- Barad, Karen. 2003. "Posthumanist Performativity: Toward an Understanding of How Matter Comes to Matter." A Feminist Companion to the Posthumanities 28 (3): 801–31. [https://doi.org/10.1007/978-3-319-62140-1\\_19](https://doi.org/10.1007/978-3-319-62140-1_19).
- Gamboa, Mafalda. 2023. "My Body, My Baby, and Everything Else: An Autoethnographic Illustrated Portfolio of Intra-Actions in Pregnancy and Childbirth." In ACM International Conference Proceeding Series. Association for Computing Machinery. <https://doi.org/10.1145/3569009.3572797>.
- (skim) Sanches, Pedro, Noura How ell, Vasiliki Tsaknaki, Tom Jenkins, and Karey Helms. 2022. "Diffraction-in-Action: Designerly Explorations of Agential Realism Through Lived Data." In Conference on Human Factors in Computing Systems - Proceedings. Association for Computing Machinery. <https://doi.org/10.1145/3491102.3502029>.

9/29 @ 11:59 p.m.  
reading response

## AI AND TECHNOLOGICAL MEDIATION

### WEEK 8: Entangled with AI

#### October 7th & 9th:

- Giaccardi, Elisa, and Johan Redström. 2020. "Technology and More-Than-Human Design." *Design Issues* 36 (4).
- Suchman, Lucy. 2023. "The Uncontroversial 'Thingness' of AI." *Big Data and Society* 10 (2): 1–5. <https://doi.org/10.1177/20539517231206794>.
- Atlas of AI: Earth; Kate Crawford 2021
- (skim) Benjamin, Jesse Josua, Arne Berger, Nick Merrill, and James Pierce. 2021. "Machine Learning Uncertainty as a Design Material: A Post-Phenomenological Inquiry." <https://doi.org/10.1145/3411764.3445481>.

10/6 @ 11:59 p.m.  
reading response  
canvas discussion

10/9 in class  
Midterm progress  
pin-up

### WEEK 9: Being Co-Shaped

#### October 14th (off)

#### October 16th

- Latour, Bruno. 1992. "Where Are the Missing Masses? The Sociology of a Few Mundane Artifacts." *Shaping Technology/Building Society. Studies in Sociotechnical Change*, 225–58.
- Devendorf, Laura, Abigail De Kosnik, Kate Mattingly, and Kimiko Ryokai. 2016. "Probing the Potential of Post-Anthropocentric 3D Printing." *DIS 2016 - Proceedings of the 2016 ACM Conference on Designing Interactive Systems: Fuse*, 170–81. <https://doi.org/10.1145/2901790.2901879>.
- (bonus) Desjardins, Audrey, and Ron Wakkary. 2016. "Living in a Prototype: A Reconfigured Space." In *Proceedings of the 2016 CHI Conference on Human Factors in Computing Systems (CHI '16)*, 5274–85. ACM. <https://doi.org/10.1145/2858036.2858261>.

10/15 @ 11:59 p.m.  
reading response

10/18 @ 11:59 p.m.  
**Midterm Due**

## POSTHUMAN SUBJECTIVITIES AND STORIES

### WEEK 10: MTH Bodies and Subjectivities

#### October 21 & 23

- Chen, Mel Y. 2011. "Toxic Animacies, Inanimate Affections." *GLQ* 17 (2–3): 265–86. <https://doi.org/10.1215/10642684-1163400>.
- Janicki, Sylvia, Alexandra Teixeira Riggs, Noura Howell, Anne Sullivan, and Nassim Parvin. 2024. "Sensing Bodies: Engaging Postcolonial Histories through More-than-Human Interactions." In *Proceedings of the Eighteenth International Conference on Tangible, Embedded, and Embodied Interaction (TEI '24)*. New York, New York, USA: Association for Computing Machinery.
- Revisit: 2010. *New Materialisms: Ontology, Agency, and Politics*. Edited by Diana Coole and Samantha Frost. Duke University Press. **Page 1 - 36; focus on Bioethics**

10/20 @ 11:59 p.m.  
reading response

## WEEK 11: Fabulation and MTH Storytelling

October 28 & October 30

- Søndergaard, Marie Louise Juul. 2023. "What Mosses Can Teach Us about Design Fabulations and Feminist More-than-Human Care." *Human-Computer Interaction*. <https://doi.org/10.1080/07370024.2023.2269893>.
- (skim) Haraway Staying with the Trouble CH 1
- Mother of Invention: <https://slate.com/technology/2018/02/mother-of-invention-a-new-short-story-by-nnedi-okorafor.html>
- McKittrick, Katherine, Frances H. O'Shaughnessy, and Kendall Witaszek. 2018. "Rhythm, or On Sylvia Wynter's Science of the Word." *American Quarterly*. Baltimore: Johns Hopkins University Press. <https://doi.org/10.1353/aq.2018.0069>.

## MTH ETHICS

### WEEK 12: Pluriverse

November 4 & 6

- Notes on Excess: Towards Pluriversal Design; Marisol de la Cadena and Arturo Escobar
- Braiding Sweetgrass, Robin Wall Kimmerer; Asters and Goldenrod pg. 40 - 49
- (skim) Towards a Decolonial Critique of Modernity Bu en Vivir, Relationality and the Task of Listening; Rolando Vasquez

### WEEK 13: Care & Repair

November 11 & 13

- Puig de la Bellacasa, Maria. 2011. *Matters of Care in Technoscience: Assembling Neglected things*.
- Fujikane, Candace. 2021. *Mapping Abundance for a Planetary Future: Kanaka Maoli and Critical Settler Cartographies in Hawai'i*. Duke University Press. **Introduction: Abundant Cartographies for a Planetary Future**
- (skim) Helms, Karey. 2021. "Entangled Reflections on Designing with Leaky Breastfeeding Bodies." *DIS 2021 - Proceedings of the 2021 ACM Designing Interactive Systems Conference: Nowhere and Everywhere, 1998–2012*. <https://doi.org/10.1145/3461778.3462048>.

## ENTANGLEMENTS IN HISTORY IN PLACE

### WEEK 14: Duration and Politics

November 18 & 20

- Táíwò, Olúfemi O. 2022. "What's Next : Why Reparations Require Climate Justice." In *Reconsidering Reparations*. Oxford University Press.
- Biggs, Heidi, Shellye Suttles, and Shaowen Bardzell. 2023. "Redlining Maps and Terrains of Sustainability: Interdisciplinary Mapping of Racialized Redlining to Present-Day Sustainability Agendas in HCI." In *Conference on Human Factors in Computing Systems - Proceedings*. Vol. 18. ACM. <https://doi.org/10.1145/3544548.3581491>.

10/27 @ 11:59 p.m.  
reading response

10/30 @ 3:30

Bring in 3 directions  
for the final project  
to discuss in class

11/3 @ 11:59 p.m.  
reading response

11/6 @ 11:59 p.m.  
**Final proposal due**

11/10 @ 11:59 p.m.  
reading response

11/13 @ 3:29 p.m.

**Draft of ethics  
statement due**

(sharing in class  
for feedback and  
discussion)

11/17 @ 11:59 p.m.  
reading response

11/20  
final pinup

## WEEK 15-onward: Wrapping up

Nov 25: Final Presentations (progress and feedback)

Nov 27: Off

Dec 2: Working Class (optional) open office hours

**Dec 11: Final Project Due**

11/25 present  
progress in class

12/11 @ 11:59 p.m.  
**FINAL DUE**

## POLICIES AND RESOURCES

### Attendance

Participation in this class is important so that we can explore and understand the readings together. Your attendance is important; however I acknowledge we live in uncertain times. If you need to miss class, please email ahead of time, and please attend as many classes as possible. Your presence matters! And you will learn things in class that you wouldn't just by reading alone, including detailed instructions, experiential practicing of skills, classmate thoughts and questions, and more detailed information about assignments.

*Any absences due to health reasons and personal or family emergencies will be excused. Stay home if you feel sick, to protect yourself and others. Please communicate with me in advance if you will be missing a class.*

3 unexcused absences are allowed (including job/internship interviews, needing to do a presentation for another project, or other activities that conflict with class). However additional unexcused absences will lower the student's overall grade by 1% each time. If you feel that you are falling behind due to an illness, emergency, or other reason, please come see me and we can make a plan for alternate arrangements.

### A note on COVID-19

I want to acknowledge that we are still in a dynamic and what can feel like a precarious time. I will strive to create a stimulating learning environment, although there may be uncertainties or complications that arise during the course that will require flexibility and mutual trust. Do not hesitate to contact me if there is anything you would like to discuss at any point during the course. Please communicate with me if a situation arises that will require flexibility and we can adjust as needed. **If you feel ill, please stay home if you feel sick, to protect yourself and others.**

For our in-person class meetings, I will may wear a high-quality N/KN-95 mask and I will have masks available should anyone want to use one. The University System of Georgia encourages people to wear masks based on their preference and assessment of personal risk. In addition, if interested, students can contact Stamps Health Services for information about scheduling a Covid-19 vaccine and/or booster.

### Grading Scale

Your final grade will be assigned as a letter grade according to the following scale:

A	90-100%
B	80-89%
C	70-79%
D	60-69%
F	0-59%

According to policy, grades at Georgia Tech are interpreted as follows:

A Excellent (4 quality points per credit hour)

B Good (3 quality points per credit hour)

C Satisfactory (2 quality points per credit hour)

D Passing (1 quality point per credit hour)

F Failure (0 quality points per credit hour)

See <http://registrar.gatech.edu/info/grading-system> for more information about the grading system at Georgia Tech.



## **Due Dates and Late Policy**

For late submissions, one half point will be deducted for every late day (0.5 point for up to 24 hours late, 1 point for up to 48 hours, etc), up until half credit.

## **Academic Integrity**

Georgia Tech aims to cultivate a community based on trust, academic integrity, and honor. Students are expected to act according to the highest ethical standards and to follow the Georgia Tech Academic Honor Code <https://policylibrary.gatech.edu/student-life/academic-honor-code>

## **Accommodations**

If you are a student with learning needs that require special accommodation, contact the Office of Disability Services at (404)894-2563 or <http://disabilityservices.gatech.edu/> as soon as possible, to make an appointment to discuss your special needs and to obtain an accommodations letter. Please also e-mail me as soon as possible in order to set up a time to discuss your learning needs.

## **Student-Faculty Expectations Agreement**

At Georgia Tech we believe that it is important to strive for an atmosphere of mutual respect, acknowledgement, and responsibility between faculty members and the student body. See <http://www.catalog.gatech.edu/rules/22/> for an articulation of some basic expectation that you can have of me and that I have of you. In the end, simple respect for knowledge, hard work, and cordial interactions will help build the environment we seek.

## **Statement on Inclusivity and Diversity**

The Ivan Allen College of Liberal Arts supports the Georgia Institute of Technology's commitment to creating a campus free of discrimination on the basis of race, color, religion, sex, national origin, age, disability, sexual orientation, gender identity, or veteran status. We further affirm the importance of cultivating an intellectual climate that allows us to better understand the similarities and differences of those who constitute the Georgia Tech community, as well as the necessity of working against inequalities that may also manifest here as they do in the broader society.

## **Additional Resources**

If you are experiencing anxiety or depression or a medical, personal, or family crisis, or if you just feel overwhelmed, please do not hesitate to reach out for help. Everybody needs help sometimes, and college can be a personally challenging time. You are not alone, and many of us are available to be sympathetic listeners and to share our own strategies for coping with stressful situations. In addition, professional counselors and medical practitioners have expertise that can be very helpful.

## **Out-of-class work hours expectations**

At Georgia Tech, a 3 credit class usually indicates that students should expect to spend about 6 hours per week on the class outside of our meeting times. Given that, I'd say you should not be spending more than 4 hours per week reading for this class. It is a skill that you can develop over time, so reading should get faster during the semester. But if you are consistently spending more than 4 hours per week looking at the readings, let me know and we can work in more depth on developing reading strategies.

## **Additional Resources Continued**

The Dean of Students has a list of services (see <https://studentlife.gatech.edu/content/get-help-now> Links to an external site.).

If you are the victim of sexual misconduct or harassment, resources are listed at: <https://diversity.gatech.edu/equitycompliance/reporting-options/i-want-report-incident>)

VOICE Advocates also serve as confidential resources for victim-survivors (speaking to them does not trigger an official reporting process): <https://wellnesscenter.gatech.edu/voice>

If you are struggling with any level of mental health issues, there are resources available on campus. Between 9 a.m. and 5 p.m. you can walk into Smithgate Hall 238, or there are services available by phone 24/7 if you call 404-894-2575. More information is at: <https://mentalhealth.gatech.edu/>

Communication Center:

If you are curious about getting help with writing and communication there are services on campus for getting feedback and coaching on these things at the Communication Center:

<https://www.communicationcenter.gatech.edu/>

## **AI and Cell Phone Policy:**

LET'S DISCUSS

But this is ACM's current policy on AI:

"Generative AI tools and technologies, such as ChatGPT, may not be listed as authors of an ACM published Work. The use of generative AI tools and technologies to create content is permitted but must be fully disclosed in the Work. For example, the authors could include the following statement in the Acknowledgements section of the Work: ChatGPT was utilized to generate sections of this Work, including text, tables, graphs, code, data, citations, etc.). If you are uncertain about the need to disclose the use of a particular tool, err on the side of caution, and include a disclosure in the acknowledgements section of the Work."

Either 'copy paste' or using ML generators to generate base text is probably not ok or needs to be disclosed with a rationale. You need to agree with and have thought of your own ideas in this class.

Using generators for brainstorming, grammar, spell check, argument checking is ok. But you still need to understand, agree with, and generally be responsible for the thinking and writing in your assignments.